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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,524	01/29/2004	Jonathan Paul Patrizio	200314241-1	5514

22879 7590 06/30/2011

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
3404 E. Harmony Road
Mail Stop 35
FORT COLLINS, CO 80528

EXAMINER	
KIM, EUNHEE	

ART UNIT	PAPER NUMBER
2123	

NOTIFICATION DATE	DELIVERY MODE
06/30/2011	ELECTRONIC

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JERRY.SHORMA@HP.COM
ipa.mail@hp.com
laura.m.clark@hp.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JONATHAN PAUL PATRIZIO, ERIC MARTIN SODERBERG, and JAMES RUSSELL CURTIS

Appeal 2009-011570
Application 10/767,524
Technology Center 2100

Before JASON V. MORGAN, ERIC B. CHEN, and BRUCE R. WINSOR, *Administrative Patent Judges*.

WINSOR, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a Non-Final Rejection of claims 1-16, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

Appellants' invention relates to a computer cluster simulation system that simulates the computer cluster's failure response for evaluation of the robustness of a computer cluster when confronted with various failure scenarios. (Spec. ¶ [02]). Claim 1, which is illustrative of the invention, reads as follows:

> 1. A computer system comprising:
>
> a simulator including:
>
> a virtual-failure event selector providing for selecting a virtual-failure event corresponding to a real-failure event that applies to a real computer cluster, and
>
> a virtual-cluster generator for generating a first virtual cluster in a virtual pre-failure configuration corresponding to a real pre-failure configuration of said real computer cluster, and for, in response to selection of said virtual-failure event, generating a second virtual cluster in a virtual post-failure configuration corresponding to a real post-failure configuration that said real computer cluster would assume in response to said real-failure event.

Claims 1-16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Stewart (US 7,107,191 B2; Sep. 12, 2006) in view of Kesavan (US 7,228,458 B1; June 5, 2007).

Rather than repeat the arguments here, we make reference to the Brief (filed Nov. 14, 2008) and the Answer (mailed Feb. 20, 2009) for the

respective positions of Appellants and the Examiner. Only those arguments actually made by Appellants have been considered in this decision. Arguments that Appellants did not make in the Brief have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

ISSUE

Appellants have argued the patentability of the claims in two groups: Group 1, which includes independent claims 1 and its dependent claims 2-9, and Group 2, which includes independent claim 10 and its dependent claims 11-16 (Br. 11, ¶ [02]). No separate arguments are presented for the dependent claims (Br. 15(¶ [16]), 17 (¶ [21])). Group 2 is argued on the same basis as Group 1 (Br. 16(¶ [18])). Therefore, we select claim 1 as the representative claim, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

The pivotal issue presented by Appellants' contentions is whether a person having ordinary skill in the art (herein a "skilled person") would be led to combine Stewarts' system that simulates the operation of various configurations of a computer cluster by creating virtual representations of the computer cluster, with Kesavan's system that tests a computer cluster by simulating various fault conditions in a real computer cluster, to produce a system that includes: "1) a virtual-cluster generator, 2) a virtual-failure event, 3) a second (or a first) virtual cluster, [and] 4) a virtual post-failure configuration" (Br. 13 (¶ [10])), as recited in claim 1?

FINDINGS OF FACT (FF)

Stewart

1. Stewart discloses a performance simulator that simulates the operation of a cluster of machines in a computer system, such as a web farm (col. 3, ll. 33-36).

2. Stewart discloses that the performance simulator predicts the performance of the resources of the computer system under defined conditions, such as topology and workload (col. 3, ll. 53-57).

3. Stewart discloses that conditions may be specified by different or additional input information (col. 3, ll. 62-65).

Kesavan

4. Kesavan discloses prequalification testing of components for use in a clustering environment by simulating cluster based functions and faults in a non-clustered environment (col. 2, ll. 30-41).

5. Kesavan discloses testing to verify operation in a no-fault environment and under various fault /failure scenarios (col. 2, l. 54 – col. 3, l. 3).

PRINCIPLES OF LAW

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 417 (2007). "[T]he [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418. "The obviousness analysis cannot be confined by ... overemphasis on the importance of published articles and the explicit content of issued patents." *Id.* at 419. "A person of ordinary skill is also a person of ordinary creativity, not an automaton." *Id.* at 421.

> To justify combining reference teachings in support of a rejection it is not necessary that a device shown in one reference can be physically inserted into the device shown in the other. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.

In re Keller, 642 F.2d 413, 425 (CCPA 1981) (citations omitted).

ANALYSIS

Appellants contend that "Kesavan does not teach or suggest: 1) a virtual-cluster generator, 2) a virtual-failure event, 3) a second (or a first) virtual cluster, [and] 4) a virtual post-failure configuration" (Br. 13 (¶ [10])), as recited in claim 1. Appellants further contend that nothing in Stewart's disclosure suggests that its performance simulator is designed to accept test inputs that simulate failure scenarios (Br. 15 (¶ [15])) and that "nothing in either reference would suggest that Stewart's simulator would respond to such inputs by generating a second virtual cluster in a second virtual

configuration" (*id.*). Appellants also contend that "there is no motivation or rationale for the modification of Stewart in accordance with Kesavan as proposed in the Office Action" (Br. 15 (¶ [16])).

The Examiner has articulated reasonable findings (Ans. 3-5) and explanations (Ans. 8-11) which we adopt as our own, and will not repeat here. For emphasis, we provide the following further explanation.

Central to Appellants' contentions is a distinction which Appellants draw between evaluating a virtual (i.e., simulated) computer cluster as recited in claim 1 and as disclosed in Stewart, and testing a real computer cluster as allegedly disclosed in Kesavan (*see* Br. 11-12 (¶¶ [03]-[05]), 14 (¶¶ [11], [13])). We do not find this distinction to be persuasive. As conceded by Appellants (App Br. 14-15 (¶ [14])), a skilled person would find it obvious to combine the teachings of Kesavan with those of Stewart, but argue that such a combination would not result in the claimed invention because nothing in Stewart suggests that its performance simulator is designed to accept test inputs that simulate failure modes (Br. 15 (¶ [15])). However, such insertion of one disclosure into another is not the standard by which obviousness is measured, *see Keller*, 642 F.2d at 425. "Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art." *Id.* Furthermore, the obviousness evaluation is not confined to the precise teachings of the cited references, but may take into account the creativity of the skilled person, *see KSR*, 550 U.S. at 418-419, 421.

Here, Stewart discloses the use of a simulator that creates a virtual cluster (i.e., "a virtual cluster generator") that represents normal operation of a real computer cluster having a defined topology and workload, i.e., "a first

virtual cluster in a virtual pre-failure configuration" (FF 1, 2). Kesavan teaches that component performance in a computer cluster may be tested in a non-clustered environment by a prequalification test that *simulates* both normal and failure conditions (FF 4, 5) (i.e., a "virtual cluster generator"). In other words, Kesavan teaches that a clustered environment may be simulated (i.e., a "virtual cluster") in both normal and fault/failure configurations (i.e., "first virtual cluster" and "second virtual cluster") and that a fault/failure scenario may be simulated (i.e., "virtual-failure event").

The skilled person would recognize that the advantages of Kesavan's simulated (i.e., "virtual") testing of fault/failure scenarios could be incorporated into a computer cluster simulator such as taught by Stewart, predictably improving Stewart's simulator in the same way that it improves Kesavan's simulated testing of components of a computer cluster, *see KSR,* 550 U.S. at 417. This is particularly true in view of Stewart's teaching that different or additional input conditions may be specified (FF 3). The skilled person would further recognize that in simulating a fault/failure scenario, the simulator would necessarily create a representation of the computer cluster after the occurrence of the fault/failure (i.e., a "virtual cluster in a virtual post-failure configuration"). We further find that the incorporation of Kesavan's simulated fault/failure scenario testing into Stewart's simulator is within the skill of the skilled person, *see KSR, id.*

Accordingly, we sustain the rejection of claim 1 and of claims 2-16.

DECISION

The decision of the Examiner to reject claims 1-16 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2010).

AFFIRMED

msc